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Abstrakt:

Selectivity of amphiphilic cyclodextrins towards volatile organic compounds

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The use of cyclodextrins (CDs) to control the release of fragrances or for removal of malodours has been studied for several years¹ and has led to a number of successful products. The commercially available CDs (α , β and γ -CD) are known to make inclusion complexes with a range of different guest molecules^{e.g.} ². Due to the difference in the cavity size of the three CDs, the stability of a complex with a guest is affected by the size of the guest. Selectivity can be observed in the formation of a complex between a specific CD and guests with different sizes.

We have developed a simple and fast method to anchor CDs to textile surfaces utilising amphiphilic CDs, i.e. CDs modified with short-length fatty acids.. This allows for easy and fast coating of a large range of surfaces and for the development of CD functionalized products, such as air filters.

In this study, butanoylated α -, β - and γ -CDs were synthesised, by direct esterification of native α , β and γ -CD with butanoic acid chloride in the presence of LiH. The capacity and selectivity of the amphiphilic CDs towards the uptake of volatile organic compounds was investigated by use of gas chromatography.

1. Buschmann, H.J. and Knittel, D. and Schollmeyer, E. Buschmann, H.J. and Knittel, D. and Schollmeyer, E. *Journal of Inclusion Phenomena and Macrocyclic Chemistry*. **2001** 40(3), 169-172.
2. Szejtli, J., *Pure Appl Chem*, **2004**, 76(10), 1825-1845